

WHAT IS CLAIMED IS:

1. A process for producing high melting mesogens, said process comprising:  
combining a first aromatic carbon solvent system having boiling points in the atmospheric equivalent boiling point (AEBP) range of about 285° to about 500°C, at least 80% of the carbon atoms of said hydrocarbons are aromatic as characterized by carbon 13 NMR and said aromatic hydrocarbons are selected from the group consisting of (i) aromatic compounds and N, O and S heteroaromatic compounds having 2 to 5 rings, (ii) substituted aromatic compounds and N, O and S heteroaromatic compounds having 2 to 5 rings wherein said substituents are alkyl groups having 1 to 3 carbons (C<sub>1</sub> to C<sub>3</sub>), (iii) hydroaromatic compounds and N, O and S heterohydroaromatic compounds having 2 to 5 rings, (iv) substituted hydroaromatic compounds and N, O and S heterohydroaromatic compounds having 2 to 5 rings wherein said substituents are alkyl groups having 1 to 3 carbons (C<sub>1</sub> to C<sub>3</sub>), and (v) mixtures thereof with a second solvent system having a solubility parameter in the range of 8 to 11.5, the ratio of said first solvent system to said second solvent system ranging from 1:20 to 2:5 to form an extraction solution;

adding said extraction solution to a pitch in a solution to pitch ratio ranging from about 3:1 to about 20:1; and

extracting said pitch with said extraction solution to yield a residue of mesogens, said mesogens melting at or above a temperature of 375°C.

2. A solvated mesophase pitch which comprises:  
mesogens; and

5 to 40% of a solvating component comprising a mixture of aromatic hydrocarbons having boiling points in the atmospheric equivalent boiling point (AEBP) range of about 285° to about 500°C, at least 80% of the carbon atoms of said hydrocarbons are aromatic as characterized by carbon 13 NMR and said aromatic hydrocarbons are selected from the group consisting of (i) aromatic compounds and N, O and S heteroaromatic compounds having 2 to 5 rings, (ii) substituted aromatic compounds and N, O and S heteroaromatic compounds having 2 to 5 rings wherein said substituents are alkyl groups having 1 to 3 carbons (C<sub>1</sub> to C<sub>3</sub>), (iii) hydroaromatic compounds and N, O and S heterohydroaromatic compounds having 2 to 5 rings, (iv) substituted hydroaromatic compounds and N, O and S heterohydroaromatic compounds having 2 to 5 rings wherein said substituents are alkyl groups having 1 to 3 carbons (C<sub>1</sub> to C<sub>3</sub>), and (v) mixtures thereof.

3. A solvated mesophase pitch as set forth in Claim 2, wherein said solvating component is a thermally treated decant oil fraction.
4. A solvated mesophase pitch as set forth in Claim 2, wherein at least 85% of the carbon atoms of said solvating component are aromatic carbon atoms.
5. The solvated mesophase pitch of Claim 2, wherein at least 80% of the compounds of said solvating component boil within plus or minus 60°C of the mean boiling point of said solvating component.
6. The solvated mesophase pitch of Claim 2 which when spun into a fiber yields a green fiber having a diameter of less than 13 microns.
7. A process for producing a thermally cracked aromatic solvating component of a solvated mesophase pitch comprising the steps of:
  - selecting an aromatic hydrocarbon having less than 80% by weight of aromatic carbons;
  - thermally cracking said aromatic hydrocarbon at a temperature of 400° to 540°C and a pressure of up to 1000 psig for a time sufficient to increase the carbon content to greater than 80%; and
  - fractionating said thermally cracked aromatic hydrocarbon to obtain a distillate boiling in the range of 285° to 500°C.
8. A green fiber comprising solvated mesophase pitch having a diameter of less than 13 microns.